

REMARKS

Entry of this Amendment in accordance with the provisions of 37 CFR §1.114, and allowance of this application, as amended, is respectfully requested. Appreciation is expressed to the Examiner for the allowance of claims 25, 27, 46 and 47.

This Amendment is in response to the Final Office Action dated November 21, 2006. By the present Amendment, the claims have been amended to clarify the invention as will be discussed below.

Briefly, the present Amendment has been made to clarify a feature of the invention defined in the claims and illustrated, for example, in Figs. such as Figs. 1 and 2. In particular, as shown in these Figures, a substrate 1 is provided which includes a via 5 for thermal diffusion of heat from transistors mounted on the substrate. In the example shown in Figs. 1 and 2 an emitter wiring 10 is provided to connect the emitter electrode 7 to the via in the semiconductor substrate. In addition, as also shown in these Figures, a multilayer wiring board 3 is provided which includes a thermal via 4. In particular, to improve the conduction of heat, as clearly shown in Figs. 2 and 5 (and discussed, for example, on page 19, line 5 et seq. of the original specification), the entire area occupied by the via holes 5 is included only within the area occupied by the thermal vias 4 in the XY plane in the Figs. . As a result, as noted on page 19, line 8 et seq. of the original Specification, the transmission of heat to the underside of the multilayer wiring board 3 is conducted in an extremely efficient manner.

Reconsideration and allowance of claims 14-20, 23, 26, 28-38, 43-45, 48 and 49 as being anticipated by the applicants admitted Prior Art is respectfully requested. With regard to this, it has been argued previously that the admitted Prior Art, such as shown

in Fig. 4, very clearly shows that the entire area of the via holes 5 in the substrate 1 are clearly not aligned with the through holes 4 in the multilayer wiring board 3. However, as explained on page 9 in the first full paragraph of the Office Action, the Examiner is taking the position that:

“The scope of the language, “areas which the through holes in the multilayer wiring board occupy” is not limited in scope to areas in which **only** the through holes in the board occupy.”

The Office Action goes on to state:

“In particular, for each pair of adjacent board and substrate through holes, there are areas in which the through holes and the board occupies that are larger than areas in which only the through holes in the board occupy, and include (but not necessarily overlap) the entire areas in which through holes in the substrate occupy, such as areas including both the entire areas in which the through holes in the substrate occupy in the areas in which only the through holes occupy.”

Accordingly, to respond to this broad interpretation of the claim language, each of the rejected independent claims have been amended to clarify that the entire areas of the through holes of the semiconductor substrate are included “in areas which only the through holes in the multilayer wiring board occupy.” It is respectfully submitted that this serves to clearly define the arrangement, such as shown in Fig. 2(c) while clearly distinguishing over the arrangement shown in the Prior Art Fig. 4. It is noted that this Amendment has been made in each of the independent claims 14, 15, 16, 17, 23 and 26. Therefore, reconsideration and allowance of these amended independent claims over the admitted Prior Art is earnestly solicited.

With regard to the independent claim 24, inasmuch as allowed claim 25 defines the features of claim 24, together with the arrangement of the semiconductor device of

claim 24 with a multilayer wiring board having three through holes, claim 24 has been canceled at the present time, without prejudice to the applicants right to proceed with subject matter similar to claim 24 at a later date.

Reconsideration and removal of the 35 USC §101 and §112 rejections against independent claims 21 and 22 and their dependent claims 39-42 is also respectfully requested. By the present Amendment, each of the independent claims 21 and 22 has been amended to clarify that the through holes of the multilayer wiring board are distributed "to be aligned relative to at least one transistor of a semiconductor substrate mounted on the multilayer wiring board such that an in plane distribution of heat dissipated from the transistor substantially coincides with the distribution of the through holes." As such, it is respectfully submitted that the language regarding the alignment of the through holes with the transistors is a clear device limitation, and the fact that this brings about a desired function with regard to the distribution of heat dissipated from a transistor does not render either of claims 21 or 22 non-statutory or vague and indefinite. As clearly indicated in MPEP §2173.05(g):

"There is nothing inherently wrong with finding some part of an invention in functional terms. Functional language does not, in and of itself, render a claim improper."

In addition, MPEP §2173.05(g) goes on to state:


" A functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used. A functional limitation is often used in association with an element, ingredient, or step of a process to define a particular capability or purpose that is served by the recited element, ingredient or step."

In the present instance, the function of the distribution of heat dissipated from the transistor by virtue of the alignment of the through holes relative to the transistor clearly is a particular capability of the structure defined by each of the independent claims 21 and 22. Therefore, reconsideration and removal of the 35 USC §101 and §112 rejections against these claims is respectfully requested.

If the Examiner believes that there are any other points which may be clarified or otherwise disposed of either by telephone discussion or by personal interview, the Examiner is invited to contact Applicants' undersigned attorney at the number indicated below.

To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to the Antonelli, Terry, Stout & Kraus, LLP Deposit Account No. 01-2135 (Docket No. 500.40530X00), and please credit any excess fees to such deposit account.

Respectfully submitted,
ANTONELLI, TERRY, STOUT & KRAUS, LLP

By 
Gregory E. Montone
Reg. No. 28,141

GEM/dks

1300 North Seventeenth Street, Suite 1800
Arlington, Virginia 22209
Telephone: (703) 312-6600
Facsimile: (703) 312-6666